



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,376	03/26/2004	Olav Lysne	1380-0191PUS2	7638

2292 7590 11/23/2007
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
PATEL, CHANDRAHAS B	

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
11/23/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/809,376

Applicant(s)

LYSNE ET AL.

Examiner

Chandahas Patel

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 9/28/2007 have been fully considered but they are not persuasive.

Examiner withdraws 35 U.S.C. 101 rejection to claim 13 in light of submitted amendment.

Regarding claim 1, applicant states that "A deadlock occurs when a set of packets cannot proceed in the network. This occurs when none of the packets in the set can proceed first, because the next buffer space needed on the way to the destination (this buffer space may be at the opposite side of a link) is occupied by another packet in the same set." The cited reference teaches altering a route if an egress port becomes unavailable thus preventing deadlock.

Applicant explains what deadlock is in the current application and in Remarks submitted on 9/28/2007. Examiner considers this feature, however, the cited reference prevents deadlock also by changing routing table. The feature deadlock needs to be explained further in claims in order for USPTO to consider what applicant believes to be his/her invention since the claims are given broadest reasonable interpretation during examination of the application (MPEP 904.01).

Examiner interprets "deadlock free routing" as state in which no communication is possible.

Applicant further states that "...the deadlock problem only occurs in networks that do not drop packets". However, the claims does not recite any such functionality, therefore the examiner interprets "deadlock free" as explained above.

Regarding claim 5, applicant states that "Pruning the dependency graph as suggested in the present application is therefore not the same thing as pruning the topologies". However,

examiner respectfully disagrees. The cited reference clearly states, "Cycles are resolved by intelligently breaking links to yield an acyclic graph". Applicant states, "Although not specifically stated in the present application, a dependency graph is not a topology." The claims are given broadest reasonable interpretation during examination of the application (MPEP 904.01). Any collection of nodes where routing is done has tendency to have cycles. Therefore breaking cycles which makes the graph non-cyclic is clearly taught by the cited reference.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-6, 8-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Khosravi et al. (USPN 7,200,146).

Regarding claim 1, Khosravi teaches method for deadlock free altering of a network routing from a first routing function R_{old} , defining an established connection between a plurality of communication input ports $I_1... I_n$ and output ports $O_1... O_m$, in a network element, to a second routing function R_{new} , defining a new connection between the input and output ports, for execution by the network element for transmitting and receiving data packets [Col. 8, lines 31-33, Fig. 6, altering routing table will avoid deadlocks and also change connections between input and outputs], the method comprising: (1) for each input port I_i , performing the following steps: (1a) applying the first routing function R_{old} for the input port [Col. 7, lines 53-55], (1b) receiving a token on an input port I_i [Col. 8, lines 16-18, update message is the token], (1c) applying the second routing function R_{new} for the input port I_i [Col. 8, lines 34-38, in response to new switch-label], (1d) forwarding data packets to every Output port O_j associated with the

input port I_i according to the second routing function R_{new} , provided that the output port O_j has transmitted the token [Col. 9, lines 39-44], (2) for each output port O_j , performing the following steps; (2a) determining if the token has been received on all input ports associated with the output port O_j according to the first routing function R_{old} [Fig. 8, Col. 9, lines 31-44], (2b) transmitting the token on the output port O_j when the token has been received on all input ports [Fig. 9, Col. 9, lines 51-56].

Regarding claim 2, Khosravi teaches the network element is a switch [Fig. 10, 1025].

Regarding claim 3, Khosravi teaches the token is included in a data packet [Col. 8, lines 19-23, message generated by routers are in a data packet].

Regarding claim 4, Khosravi teaches the method is applied to deterministic routing functions [Col. 8, lines 17-19].

Regarding claim 5, Khosravi the method is applied to adaptive routing functions [Col. 8, lines 23-28, OSPF is adaptive routing function as routes can change depending on available shortest path].

Regarding claim 6, Khosravi teaches the method is applied to source routing [Col. 8, lines 7-12, applicant describes source routing as per packet routing which is taught by reference].

Regarding claim 8, Khosravi teaches the method is applied to only parts of a complete network [Col. 8, lines 39-41].

Regarding claim 9, Khosravi teaches network element [Fig. 10, 1010], comprising a plurality of output ports for transmitting data packets to other network elements in a network [Fig. 10, Ports 1-6], a plurality of input ports for receiving data packets from other network

elements in the network [Fig. 10, Ports 1-6], a processing device [Fig. 10, 1025], a memory, characterized in that the processing device is arranged to perform a method claim 1 [Col. 11, lines 9-13].

Regarding claim 10, Khosravi teaches routing functions are implemented as table stored in memory [Fig. 10, 1027].

Regarding claim 11, Khosravi teaches memory comprises computer program instructions arranged to perform the method when executed by the processing device [Col. 11, lines 9-13].

Regarding claim 12, Khosravi teaches the computer network system comprising a number of network elements according to claim 9 [Fig. 10].

Regarding claim 13, Khosravi teaches computer program, embodied on a storage medium or in a memory, or carried by a propagated signal [Col. 10, lines 11-15], for execution by a processing device in a network element [Col. 11, lines 9-13], characterized in that the program comprises a set of instructions arranged to perform a method according to claim 1 when executed by the processing device in the network element [Col. 11, lines 14-19].

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khosravi et al. (USPN 7,200,146) in view of Opreescu (USPN 5,784,557).

Regarding claim 7, Khosravi teaches a method as discussed in rejection of claim 5.

However, Khosravi does not teach reducing the cyclic dependency graph to non-cyclic graph.

Opreescu teaches reducing the cyclic dependency graph to non-cyclic graph [**Abstract**].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to reduce the cyclic dependency graph to non-cyclic graph so that a direction for the data packet can be established [**Col. 6, lines 44-48**].

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandrahas Patel whose telephone number is 571-270-1211. The examiner can normally be reached on Monday through Thursday 7:30 to 17:00 EST.

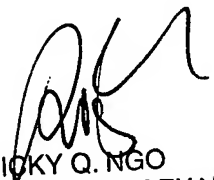
Application/Control Number:
10/809,376
Art Unit: 2616

Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CBP


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER